Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A device for depositing crystalline layers on one or more substrates in a process chamber, said process chamber comprising a ceiling and a heated floor that is vertically opposite the ceiling and receives the substrates, said device comprising:

a gas inlet member disposed at substantially the center of the process chamber, which forms gas inlet zones disposed vertically one above the other for introducing at least a first and a second gaseous starting material separately from one another;

a bottom gas inlet zone neighboring the floor of the process chamber for introducing a first starting material into the process chamber;

a top gas inlet zone neighboring the ceiling of the process chamber also for introducing the first starting material into the process chamber;

a middle gas inlet zone between the top gas inlet zone and bottom gas inlet zone for introducing the second starting material into the process chamber;

a single supply of a hydride connected to both the bottom and the top gas inlet zones, the hydride being the first starting material;

a supply of a metalorganic compound connected to the middle gas inlet zone, the metalorganic compound being the second starting material;

at least one substrate carrier arranged around the gas inlet member, being rotationally driven around its axis and carrying the one or more substrates; and

wherein the starting materials flow in a horizontal direction together with a carrier gas through the process chamber, the stream of gas being homogenized and the starting materials at least partially pre-decomposed in an inlet zone directly adjacent the gas inlet member, the decomposition products of which starting materials are deposited on the substrates in a growing zone adjacent the inlet zone, while the stream of gas is steadily depleted.

2. (Currently Amended) A method for depositing crystalline layers on one or more substrates in a process chamber, said process chamber comprising a ceiling and a heated floor which is vertically opposite the ceiling and on which the substrates lie, said method comprising the steps of:

positioning a gas inlet member at substantially the center of the process chamber for introducing at least a first and a second gaseous starting material into the process chamber through gas inlet zones disposed vertically one above the other on the gas inlet member;

arranging one or more substrates in a rotationally symmetric manner around said gas inlet member;

rotating each substrate;

introducing said first gaseous starting material through a bottom gas inlet zone neighboring the floor of the process chamber and a top gas inlet zone neighboring the ceiling of the process chamber, wherein the first starting material is a hydride, and wherein said first gaseous starting material is introduced through both the bottom gas inlet zone and the top gas inlet zone from a single supply;

introducing said second gaseous starting material through a middle gas inlet zone between the bottom gas inlet zone and the top gas inlet zone, wherein the second starting material is a metalorganic compound; and

wherein the starting materials flow in a horizontal direction together with a carrier gas through the process chamber, the stream of gas being homogenized and the starting materials at least partially pre-decomposed in an inlet zone directly adjacent the gas inlet member, the decomposition products of which starting materials are deposited on the substrates in a growing zone adjacent the inlet zone, while the stream of gas is steadily depleted; and

wherein the steps of introducing the starting materials are performed in order to reduce the horizontal extent of the inlet zone.

3. (Previously Presented) The device according to Claim 1, characterized in that the first starting material is AsH_3, PH_3 or an NH_3.

4. (Previously Presented) The device according to Claim 1, characterized in that the decomposition product of the first starting material is an element of the group V or VI and the decomposition product of the second starting material is an element of the group III or II.

5. (Previously Presented) The device according to Claim 1, characterized in that at least one of the first and the second starting material is respectively introduced into the process chamber by means of a carrier gas through the gas inlet zone associated with it.

6. (Previously Presented) The device according to Claim 1, characterized in that the first starting material is introduced into the process chamber in a concentration that is 100 to 5000 or 1000 to 5000 times higher than the second starting material.

7. (Previously Presented) The device according to Claim 1, characterized in that the vertical size of the bottom gas inlet zone or the top gas inlet zone is less than the vertical size of the middle gas inlet zone.

8. (Previously Presented) The device according to Claim 7, characterized in that the sum of the two sizes of the bottom and top gas inlet zones is less than the size of the middle gas inlet zone.

9. (Previously Presented) The device according to Claim 1, characterized in that the floor of the process chamber forming a substrate holder is heated from below.

10. (Previously Presented) The device according to Claim 1, characterized in that the process chamber has an axial symmetry.

11. (Previously Presented) The device according to Claim 10, characterized in that the substrate holder is rotationally driven about the center of the process chamber.

12. (Previously Presented) The device according to Claim 10, wherein a multiplicity of circular disk-shaped substrate carriers are disposed next to one another in the circumferential direction on the substrate holder and carry one or more substrates.

13. (Previously Presented) The device according to Claim 12, characterized in that each substrate carrier carries seven circular substrates and altogether six or more substrate carriers are associated with the substrate holder, located close to one another in uniform circumferential distribution.

14. (Previously Presented) The device according to Claim 1, characterized in that the zone of the maximum growth rate lies radially within the annular growing zone in the marginal region of the inlet zones.

15. (Previously Presented) The device according to Claim 14, characterized in that the diameter of the inlet zone is less than the radial extent of the growing zone.

16. (Previously Presented) The method according to Claim 2, characterized in that the first starting material is one of AsH_3, PH_3 and NH_3.

17. (Previously Presented) The method according to Claim 2, wherein at least one of the first and the second starting material is respectively introduced into the process chamber by means of a carrier gas through the gas inlet zone associated with it.

18. (Previously Presented) The method according to Claim 2, wherein the vertical size of the bottom gas inlet zone or the top gas inlet zone is less than the vertical size of the middle gas inlet zone.

19. (Previously Presented) The method according to Claim 2, wherein the floor of the process chamber forming a substrate holder is heated from below.

20. (Previously Presented) The method according to Claim 2, characterized in that the process chamber has an axial symmetry.